Technical Assistance Services *for* Communities
DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund Site
Review of June 22, 2018 IEPA Letter to the CAG

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Introduction

In October 2018, the DePue Community Advisory Group (CAG) requested support from the U.S. Environmental Protection Agency's (USEPA's) Technical Assistance Services for Communities (TASC) program. TASC had previously provided comments to the CAG related to the Baseline Ecological Risk Assessment (BERA) for operable unit 5 (OU5) at the DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund site (the Site). The CAG submitted the comments and Illinois EPA (IEPA) provided a response to the comments. The CAG then requested that TASC conduct a review of the IEPA response to the comments submitted by the CAG. After sharing a draft of this document with the CAG, TASC had a call with the CAG on November 16, 2018. On the call, the CAG requested that TASC make some revisions to the document and add in the original TASC comments. The changes are reflected here.

Independent technical and environmental consultants implement the TASC program. The report's contents do not necessarily reflect the policies, actions or positions of USEPA. TASC prepared this review report for the DePue Superfund CAG.

General Response

Overall, TASC considers the IEPA response and clarifications to be helpful for the CAG's understanding of the OU5 investigations. IEPA generally concurs with or acknowledges the TASC comments and indicates that IEPA will refine some conclusions or statements once IEPA has completed the clam studies. Below, TASC replies or adds to specific comments, where warranted.

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Review Comments

1. What is the role of the Superfund process and risk assessment in site reuse?

April 2018 TASC Comments: The CAG could ask if IEPA considered future use in the sampling design and risk assessment process, and when a discussion about future use may be most relevant. The CAG could consider tools for developing reuse plans that coincide with cleanup strategies. USEPA provides communities with support to develop reuse plans for sites. To learn more, visit: https://www.epa.gov/superfund-redevelopment-initiative.

Illinois EPA Response: The TASC summary of the role of risk assessment requires clarification.

- *Strictly speaking, risk assessments are used to determine if unacceptable risks or hazards are present at a site (either human or ecological). If unacceptable risk or hazard is present, remedial action is warranted. The risk assessments can be used to identify levels of contamination, below which risk or hazards are acceptable or considered protective. Protective levels identified in a risk assessment are not necessarily adopted as cleanup goals. They may be modified due to other considerations (e.g., background levels, technical impracticability, through evaluation of the NCP's [National Contingency Plan's] nine criteria, etc.).*
- *TASC states that, "Site owners and stakeholders cannot reuse a site until IEPA knows whether the contamination poses unacceptable health risks to people and wildlife." This is not the case. The Superfund process and the State of Illinois have no mechanism by which to prohibit owners, stakeholders, or wildlife from using a property in whatever manner they desire. In practical terms, it may be difficult for contaminated property to be re-developed for a variety of reasons, but the State cannot prohibit such activity if risks are unknown. If risks are known, and unacceptable risks exist for certain types of uses (e.g., residential), then the State can require Institutional Controls or Land Use Controls as part of a remediation agreement. In rare circumstances, the Illinois EPA is authorized through the Illinois Environmental Protection Act to seal a facility, preventing access. This is done in cases where emergency conditions exist or in cases of imminent and substantial endangerment.*

Regarding future use and how it is considered in sampling design and the risk assessment process, all human health and ecological risk assessments consider current and future use to determine the appropriate receptors to assess. The sampling design is generally targeted to determine the nature of contamination (i.e., the types of contaminants or wastes present) and the extent of contamination (i.e., the lateral and vertical or geographic extent of contamination or waste material). To support the human health and ecological risk assessments in Lake DePue, the sampling design implemented during the RI [Remedial Investigation] provided a substantial data set comprised of sediment samples, lowland soil samples, surface water samples during high and low flow conditions, seep and spring water samples, tissue samples from aquatic and emergent insects, vegetation, fish, amphibians, and small mammals, and wildlife population surveys of birds, reptiles, amphibians, benthic invertebrates, fish, and mammals. In addition, data collection for the ecological risk assessment is ongoing, with studies of potential impacts to fingernail clams currently underway. Illinois EPA believes the available environmental data from the RI adequately defines the nature and extent of contamination at the lake, and will be

sufficient to evaluate the risks associated with the current use and all reasonably anticipated future land uses.

It is important to note that the Superfund process requires the evaluation of a baseline human health and ecological risk assessment to support remedy decisions. The baseline risk assessment is an analysis of the potential adverse human health or ecological effects (current or future) caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these releases (i.e., under an assumption of no action) [https://www.epa.gov/risk/riskassessment-guidance-superfund-rags-part]. In accordance with EPA guidance, a baseline assessment was conducted to estimate the potential health risks associated with human exposure to Lake DePue under the assumption that no physical change in the conditions of the lake would occur. The baseline ecological risk assessment is being conducted under a similar assumption.

Therefore, the most appropriate point in the process for Illinois EPA to consider a potential future use such as a boating hub, as mentioned by the TASC, would be during the Feasibility Study when different remedial alternatives and remedial action objectives will be considered. USEPA provides guidance on evaluating reasonably anticipated future land uses (OSWER 9355. 7-04), and Illinois EPA will consider this guidance when scoping the Feasibility Study with the PRPs [potentially responsible parties]. In general, future land uses based on specific reuse plans developed by the landowner(s) and recognized land planning authorities will provide Illinois EPA a greater degree of certainty regarding the future land use anticipated for the site, and will assist in the development of appropriate remedial alternatives. Consistent with CERCLA and the NCP, Illinois EPA must ensure that all CERCLA remedies protect human health and the environment. This will include a re-assessment of the potential exposures and risk underlying each remedial alternative. Illinois EPA must also consider whether alternatives based on reasonably anticipated future land uses are cost-effective and practicable. Based on the nine remedy selection criteria specified in the NCP, the Illinois EPA may select a remedy that supports a future use different than what is described in any reuse plan (Considering Reasonably Anticipated Future Land Use and Reducing Barriers to Reuse at EPA-lead Superfund Remedial Sites, OSWER 9355. 7-19, March 2010).

TASC Response: TASC did not intend to imply that the RI to date was insufficient. TASC understands that additional sampling may occur as part of the remedial design (RD) to take into account selected remedial strategy as well as potential future reuse plans. The CAG may want to consider following up on this statement: "*Illinois EPA believes the available environmental data from the RI adequately defines the nature and extent of contamination at the lake, and will be sufficient to evaluate the risks associated with the current use and all reasonably anticipated future land uses.*"

It is TASC's understanding that the CAG has concerns about potential limitations to future use of the OU5 area. In addition, the CAG has concerns about uncertainty or potential liability where areas to be developed or disturbed have not been sampled and deemed clean and suitable for unlimited use and unrestricted exposure (UU/UE). IEPA states the most appropriate point in the process for it to consider potential future uses is the feasibility study. TASC suggests the CAG and the village of DePue (Village) continue to

raise their concerns and to share potential future uses so that these types of use can be fully considered in the remedy selection process. In addition, TASC's understanding is that the community would like a remedy that results in UU/UE status and that use restrictions (e.g., dredging restrictions) not be part of the remedy selected. As noted by IEPA, the remedy selection process must consider remedy cost. TASC notes that remedies with no use restrictions are typically costlier than remedies resulting in UU/UE status.

2a. How does combining probable effect concentration (PEC) values for multiple contaminants into a single mean PEC-Q value affect the potential risk from a single contaminant?

April 2018 TASC Comments: TASC recommends that the CAG ask IEPA for a comparison map showing only zinc and cadmium PEC-Q values, with the understanding that PEC-Q values are part of the overall risk evaluation. TASC also recommends that the CAG ask IEPA to provide information about whether metals interact with each other to affect toxicity to aquatic life. Some studies have found that metals interact to affect toxicity more than would be expected by summing the risks from each individual contaminant.

Illinois EPA Response: During the February 2018 meeting with the Village, Illinois EPA indicated it could produce such a map. However, upon examining the PEC-Qs more closely and in consulting Table 5-1 in the BERA, Illinois EPA concludes there is no need to produce such a map. A review of the data reveals that virtually all sample locations exceed an individual PEC-Q of 1.0 (i.e., indicating the contaminant concentration is higher than its respective PEC) for cadmium, or zinc, or both. Copper and lead also frequently exceed their PEC-Qs, generally within the dredged area and eastern part of the lake. Arsenic and nickel exceed their respective PEC-Qs in only three samples each (near the shore between the Division Street Outfall and the South Ditch for arsenic and east and west of the South Ditch and one location in the western part of the lake near the dredged area for nickel). There are no instances of chromium exceeding its PEC-Q. Metals in seven Goose Lake samples also exceeded their respective PECs, for cadmium, nickel or both.

As the TASC comment states, the mean PEC-Qs are interpreted within the BERA in the context of other measures of potential risk, such as bioavailability, community metrics, and toxicity test results. PECs and PEC-Qs are screening criteria, non-site-specific benchmarks that indicate only that potential risk may exist. As the other more site-specific tests indicated, not every sample had metals that were bioavailable and not every sample subject to toxicity testing demonstrated toxicity to the test organism, despite individual PECs being exceeded or despite PEC-Qs or mean PEC-Qs being greater than 1.0. This is why Illinois EPA devised a method that would assimilate both the generic benchmarks and site-specific data, rather than rely solely on the generic PEC-Q benchmark.

TASC recommends the CAG ask Illinois EPA about whether metals interact with each other to affect toxicity to aquatic life. The TASC comment then states that the TASC is aware that some studies have found that some metals may interact to affect toxicity more than by summing the risks. Illinois EPA informs the CAG that Illinois EPA does not have the resources to conduct its own independent research into fundamental questions such as this, but generally relies on

guidance from USEPA in conducting risk assessments and risk characterization. The TASC comment implies the TASC has some knowledge of this already. If the TASC is aware of how this information has been incorporated into USEPA guidance or ecological risk assessment, such specific information can be shared with Illinois EPA for evaluation.

TASC Response: TASC is unaware of specific USEPA guidance that incorporates studies indicating that metals interact to affect toxicity more than would be expected by summing the risks from each individual contaminant. TASC agrees that regulatory agencies are typically on established guidance documents, but the potential for interaction and lack of USEPA guidance could be noted as a source of uncertainty.

2b. How was the threshold mean PEC-Q for toxicity developed in the BERA?

April 2018 TASC Comments: TASC recommends that the CAG ask IEPA for clarification regarding how IEPA developed the thresholds for mean PEC-Qs to define low, medium and high-risk samples. TASC also recommends that the CAG ask for clarification regarding how the threshold of a mean PEC-Q < 1.7 is considered "low risk" when this level can be equivalent of up to an incidence of effects as high as 50 percent of the exposed aquatic life.

Incidence of Effects	IEPA Mean PEC-Q	USEPA Mean PEC-Q	Interpretation
20% - 50%	< 1.72	< 0.5*	Low Risk: adverse effects are unlikely
50% - 95%	1.72 to 7	0.5 to 5.0	Medium Risk: adverse effects are possible
> 95%	> 7	> 5	High Risk: adverse effects Are probable

Illinois EPA Response: Illinois EPA explained its process for synthesizing the mean PEC-Qs, community metrics, and toxicity test results in its presentation to the CAG in November 2017 and in more detail to the Village in February 2018. The site-specific mean PEC-Q values that Illinois EPA has used to characterize low, medium (or "uncertain risk"), or high risk are not based on generic mean PEC-Qs alone, but were augmented to take into consideration the site-specific community metrics, and toxicity test results. As such, the site-specific mean PEC-Qs are not directly comparable to mean PEC-Qs discussed in the USGS guidance, which are based on observation of toxicity alone. If Illinois EPA continues to utilize the site-specific mean PEC-Qs to help develop an area of remedial action, the categories may need to be re-defined based on results from the ongoing fingernail clam study.

Illinois EPA does not have any guidelines for creating low, medium, and high-risk categories. In other words, there is no Illinois EPA guidance that equates a 20-50% incidence of effects with "low risk." The incidence of effects and risk categories were site-specific decisions made by Illinois EPA's technical team working on the site (i.e., Illinois EPA project manager and risk assessor, and its technical support contractor project manager, risk assessor and ecologist) and briefed to Illinois EPA management. The Illinois EPA technical team interpreted a 20% incidence of effects as roughly equivalent to background or equivalent to the conditions at Goose

Lake. A risk level of less than 5 0% incidence of effects is interpreted to mean that adverse effects are less likely than not. Similarly, an incidence of effects of greater than 50% is interpreted as "adverse effects are more likely than not."

Adverse effects are not a certainty at any mean PEC-Q level, or at the incidence of effects levels that Illinois EPA has used to categorize different levels of risk. Table 6-15 (from the June 2012 revised BERA; table attached) illustrates the variability in generic mean PEC-Q values and associated toxicity test results and community survey results. For instance, samples that demonstrated toxicity had generic mean PEC-Qs of 1. 0, 1.11, 7.10, 7. 5 3, and 60. 8, but no toxicity was present at samples with generic mean PEC-Qs of 1.0, 1.08, 1. 72, 2.51, 4.63, or any other sample below 0.95. Similarly, differences in community metrics were seen at a generic mean PEC-Q of7.53, but not at a generic mean PEC-Q of 60.8. The data do not follow a consistent pattern, and assigning risk levels based on generic mean PEC-Qs only, or establishing a predictive value of non-toxic/toxic mean PEC-Q as was done in MacDonald's paper is not informative on a site-specific basis.

In the table included with the TASC comments, a comparison is presented between mean PEC-Q ranges representing different incidence of effects levels as developed by Illinois EPA for Lake DePue and those developed by USEPA. Illinois EPA is aware of USEPA's prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines, (EPA 905/R-00/007, June 2000), cited by the TASC. Regardless, the comparison between Illinois EPA's site specific mean PEC-Qs and USEPA's mean PEC-Qs in the TASC's table is not an "apples to apples" comparison. The USEPA mean PEC-Qs values in the table can serve as initial screening or an initial starting point to conduct additional evaluation.

The CAG and Village have questioned how the site-specific mean PEC-Q value of <1. 72 can be used to represent low risk, "when this level can be equivalent of up to an incidence of effects as high as 50 percent of the exposed aquatic life." Based on the curve-fitted model Illinois EPA employed to examine the relationship between the degree of metals contamination and probability of observing adverse effects, a site-specific mean PEC-Q of 1. 72 represents a 50% probability of observing adverse effects (i.e., exhibiting community metric effects or toxicity) at any location with that value. It does not mean that 50 percent of the exposed aquatic population at that location will demonstrate effects. Illinois EPA is using the site-specific mean PEC-Q as an estimate of the likelihood of observing adverse effects at any location within the lake; fully recognizing that there is uncertainty surrounding these probabilities.

Illinois EPA remains concerned that risks are adequately characterized, particularly in areas where the metals in sediment, bioavailability, and toxicity test data do not align to present a definitive picture of the potential risk. The probabilities represented by the site-specific mean PEC-Qs provide a quantitative framework for Illinois EPA to identify areas where the chance of adverse effects may be greater than 50/50. The formerly dredged area of the lake is such an area where the available lines of evidence do not align, but the chance of adverse effects appears to be more likely than not.

At this time, Illinois EPA's interpretation of the site-specific mean PEC-Q values and how they can be used to determine the extent of contamination presenting unacceptable risks is on hold, pending completion of the fingernail clam study in the formerly dredged area.

TASC Response: TASC believes the IEPA clarification of PEC-Qs and risk categories more clearly outline the IEPA rationale. TASC acknowledges the IEPA process and decision to not apply generic mean PEC-Qs. IEPA intends to review the fingernail clam study prior to interpreting and applying site-specific PEC-Qs.

2c. How are species sensitivity and long-term exposure to contamination assessed in the BERA?

April 2018 TASC Comments: TASC suggests that the CAG ask IEPA about the sensitivity of organisms such as the fingernail clam and how their sensitivity to contaminants is incorporated into the risk assessment threshold levels and to long-term exposure to sediment contamination. PEC-Qs less than 0.4 can be toxic to mussels, and fingernail clams are a key benthic animal missing or in low numbers at Lake DePue. The mean PEC-Q for Goose Lake, the reference lake, is 0.4, which is similar to sediment contaminant levels in Lake DePue near its intersection with the Illinois River. The CAG could ask IEPA for a description of how reference mean PEC-Q values were used in the risk evaluation.

Illinois EPA Response: Illinois EPA recognizes that fingernail clams are likely more sensitive to certain types of pollutants than the organisms found in Lake DePue during the benthic community survey and more sensitive than the organism used in the laboratory toxicity test (a chironomid). Coupled with the fact that Goose Lake includes higher numbers of fingernail clams than Lake DePue, and that the fingernail clams that have been found in Lake DePue appear to be located almost exclusively in Lake DePue west of the formerly dredged area are the reasons the in-situ toxicity study is being conducted.

The CAG asks how the reference mean PEC-Q values were used in the risk evaluation. The BERA itself provided a brief narrative comparison to the values in MacDonald et al (2000) indicating that toxicity was predicted, but that such screening results should be interpreted in association with other "sediment quality assessment tools (e.g., measures of bioavailability, sediment bioassays, and benthic macroinvertebrate surveys)." In its review of the PEC-Qs and toxicity test results, Illinois EPA recognized that the reference levels provided by MacDonald et al (2000) did not consistently predict toxicity compared to the Lake DePue results, and thus, devised a method that would assimilate both the generic benchmarks and site-specific data, rather than rely solely on the generic PEC-Q benchmark. No other states' reference values were reviewed.

TASC Response: IEPA notes the in-situ fingernail clam study is being conducted to specifically assess this species' apparent sensitivity to contamination. However, due to the fingernail clam (FNC) being a sensitive species it is therefore more susceptible to sub-lethal effects. The FNC study is not assessing sub-lethal effects and is solely assessing mortality rates. Therefore, the CAG could ask IEPA how it intends to interpret data and account for FNC's sensitivity if the FNC study does not identify high mortality rates.

2d. How is sediment type accounted for in the PEC values?

April 2018 TASC Comments: Using sediment types as a factor in risk assessment is useful because the amount of clay and organic matter in the sediment is one of the main factors affecting where chemicals may preferentially occur and how toxic they are to aquatic life. For instance, one study found that samples with more silt had a lower percent of zinc, copper, cadmium, nickel and chromium in them, while samples with more sand and organic matter had higher levels of these metals. The Minnesota Pollution Control Agency guidance on sediment toxicity notes that uncertainty will be higher when using sediment samples to develop mean PEC-Qs at depositional sites such as Lake DePue. Sample data can be normalized based on grain size or amount of organic matter. TASC recommends that the CAG ask IEPA how sediment type and size were assessed and how this was used to evaluate sediment toxicity and habitat quality.

Illinois EPA Response: Grain size and amount of organic matter were measured in sediment samples. Total organic carbon was analyzed in sediment samples to calculate the AVS-SEM/foc results.

Grain size was found to be similar between Goose Lake and Lake DePue, but there were some differences at certain locations (e.g., substrate included more sand at specific locations in Lake DePue). The BERA report indicates some differences in benthic community metrics between Goose Lake and Lake DePue are present, primarily arising from the differences in the fingernail clam populations. Certain habitat quality parameters will be analyzed during the full fingernail clam study, including total organic carbon and grain size, and evaluated to determine their role in any clam population differences.

TASC Response: IEPA indicates the fingernail clam study will further assess grain size and additional habitat quality parameters. However, it appears that measures such as grain size are to be compared between the lakes to identify differences in habitat. TASC noted the potential impact of sediment grain size on the predictability of toxicity of metals in sediment. TASC acknowledges the FNC study will assess multiple factors, but the effect of grain size on the uncertainty is another concern regarding the validity of regulatory decisions based on a mean PEC-Q.

2. How well does bioavailability data predict toxicity?

April 2018 TASC Comments: TASC recommends that the CAG ask IEPA about the reliability of the AVS-SEM analysis for determining site-specific bioavailability of metals, given that the results can be so variable. TASC also recommends that the CAG ask IEPA to explain the uncertainties in the use of AVS-SEM in predicting short-term and long-term toxicity to aquatic life in sediment. Lastly, TASC recommends that the CAG ask IEPA about potential differences in bioavailability for aquatic species that consume sediment, are predators or consume food from the water column, as bioavailability can change based on feeding styles.

Illinois EPA Response: Just as the mean PEC-Q value, benthic community metrics, and lab toxicity test results may not be accurate predictors by themselves, neither are the AVS-SEM/foc results. This is why the best approach to assessing risk is to include different lines of evidence.

Illinois EPA acknowledges the shortcomings of the SEM-AVS data; the TASC discussion and comment adequately summarizes some of these shortcomings or potential limitations. The in-situ caged clam study currently underway is designed to address some of the data gaps associated with the SEM-AVS limitations.

TASC Response: IEPA acknowledges the "shortcomings of the SEM-AVS data" and states the fingernail clam study is intended to address data gaps. TASC's concern is how IEPA will handle various lines of evidence that may not consistently indicate toxicity. For example, if the FNC study indicates high mortality but the SEMS-AVS data are applied as an argument against site-related impacts. The CAG could ask for IEPA's expected reliance on the various lines of evidence and how conservative it intends to be in identifying areas in need of remediation.

3. How does the sediment sampling depth take future site use into account?

April 2018 TASC Comments: T ASC recommends that the CAG ask IEPA if IEPA considered using mean PEC-Q values from greater depths to assess risk. TASC also recommends that the CAG ask IEPA how plans for dredging the lake were accounted for in the determination of toxicity for various parts of the lake. The depths evaluated in the BERA may not represent concentrations in the future if recontamination from deeper sediments occurred due to boat use on the lake or dredging the lake.

Illinois EPA Response: Illinois EPA acknowledges the comment and does not disagree. Illinois EPA concurs that contaminant levels that increase with depth are a complicating factor in evaluating remedial alternatives and in considerations for future risk. Such issues will be more fully explored in the Feasibility Study.

TASC Response: TASC notes the importance of including boat use and dredging as likely scenarios to consider in the feasibility study. In addition, TASC believes these anticipated activities and potential release of contamination warrants specific consideration regarding sampling and remedial liability should disturbances occur.

4. How does the western arm of Lake DePue contribute to aquatic toxicity?

April 2018 TASC Comments: TASC recommends that the CAG ask IEPA about potential source contamination along the shoreline in the western arm of the lake. According to a discussion with the CAG, the land area between the western and eastern portions of the lake was historically connected by water before it filled in with sediment.

Illinois EPA Response: The Illinois EPA has no information on contamination sources in the western arm of Lake DePue. In addition, Illinois EPA has no information to suggest that the western and eastern portions of the lake were historically connected. The earliest map of Lake DePue, produced by J.W. Woermann, U.S. Army Corps of Engineers, in 1903 (likely prior to the existence of the smelter) shows the current western arm of the lake as marsh with no connection to the eastern lake. Aerial photos from 1941 show the western arm containing water with a shore configuration similar to today, but still no connection to the east. Illinois EPA is aware that

during extreme flood events the peninsula separating the western and eastern arms of the lake may become inundated. Regardless, we would be interested to see any documentation that shows a more permanent connection between these portions of the lake.

TASC Response: TASC is unaware of any documentation that shows a more permanent connection between the western and eastern arms of the lake. Although such documentation may not exist, the CAG could continue to ask that IEPA pursue the source of the contamination in the western arm of the lake.

5. What are the sources of ammonia in Lake DePue and what role does it play in toxicity at the lake?

April 2018 TASC Comments: The CAG could ask IEPA about the potential contribution of the former phosphate manufacturing facility to ammonia concentrations in the lake as another potential source and how inclusion of the manufacturing facility as a source could affect the BERA.

Illinois EPA Response: Illinois EPA acknowledges the former fertilizer manufacturing facility as a contributor of ammonia and possibly other inputs (e.g., phosphate, sulfate) to Lake DePue. The DePue Group's own reports also acknowledge this potential contribution. The ecological risk assessment and ongoing fingernail clam study are being conducted under the CERCLA process with full acknowledgement of the facility 's potential contribution. The fingernail clam study will provide additional data on contaminants that are associated with past fertilizer manufacture as well as the zinc smelter. As the TASC comment implies, the fertilizer plant and smelter may not be the only sources for these contaminants.

TASC Response: IEPA acknowledges the potential sources of ammonia and indicates the fingernail clam study will further assess potential sources of contamination. TASC recommends the CAG ask how IEPA will address elevated levels of ammonia and determine the source of contamination. In particular, as the FNC study is designed to assess potential stressors, TASC recommends the CAG ask whether the presence of ammonia is being considered a site-related source or if specific efforts will be conducted to identify the source of ammonia.

6. How was the Quality Control Plan used in the BERA?

April 2018 TASC Comment: The QAPP for the Site likely provides information on the approved approach for addressing changes in lab protocols, including whether samples should be re-analyzed. The BERA and IEPA's presentation did not discuss how the QAPP was used to make decisions about the laboratory analyses. The CAG would benefit from access to and interpretation of the QAPP, and its contingency plans in particular. Understanding quality control for lab and field work is important for all site studies, including the BERA. TASC recommends that the CAG ask for access to the Site's QAPP and a presentation on how QAPPs are used in the

field as well as how QAPP deviations in the field are addressed to make sure data gaps do not occur.

Illinois EPA Response: QAPPs are used as a reference by field staff to ensure the appropriate samples are taken, handled correctly, packaged correctly and delivered to the lab. QAPPs are used by PRPs' consultants planning and conducting the work and by the regulatory agency to ensure the quality of collected data support the purpose of the data and the needed decision making. QAPPs address the volume of samples to be taken, method for taking samples, sample containers, preservation of samples if needed, preparing and packaging samples for shipment to the lab, procedures used to maintain, calibrate, and operate field analytical equipment, analytical methods to be used, performance criteria for acceptance of laboratory results, etc. QAPPs also deal with laboratory performance, such as lab equipment calibration procedures and acceptance criteria, data verification and validation, data management and record-keeping.

Golder Associates developed a QAPP to support site-wide investigations (prior to the site being organized into Operable Units). The Golder QAPP is included as Appendix C of the DePue Site Remedial Investigation Work Plan Phase 1 Soil and Groundwater, dated June 24, 1999. Various addenda were developed to address certain follow up efforts, and specific OUs. The OU5 work was conducted pursuant to an updated QAPP developed by BBL to support the remedial investigation work for the lake (DePue Lake Quality Assurance Project Plan Addendum, August 2006). The current work for the fingernail clam study uses these two plans as a basis for the QAPP, but includes extensive updates. These updates are included within the tables and appendices of the work plan (In-situ Caged Fingernail Clam Study Work Plan, June 2018). The documents are part of the Administrative Record for the site, and can be most easily accessed through Illinois EPA's Document Explorer tool available at https://extemal.epa.illinois.gov/DocumentExplorer.

More recent work done for OU2 and the upcoming work planned for OU4 have had separate stand-alone QAPPs developed that follow USEPA's Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) format. The same types of information are included as in the previous QAPPs, but the information is organized in a series of worksheets. These QAPPs are also available through Illinois EPA's Document Explorer.

TASC Response: The IEPA response does not specifically address if any deviations from the QAPP occurred, which normally is presented in an RI and referenced in a BERA to explain if deviations impacted the BERA results in any way. TASC recommends that the CAG request a presentation on how QAPPs are used in the field as well as how QAPP deviations in the field are addressed to make sure data gaps do not occur. Specifically, the CAG could request documentation reflecting IEPA's review of the PRP reports.

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